

INDICATIONS FOR OPERATION IN CHRONIC PURULENT OTITIS MEDIA.*

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How is to be decided the question when and upon what patients are we to operate radically in chronic purulent otitis media? Since the work of Schwartze, and more particularly of Stacke, which began a new era in the treatment of purulent ear disease, surgeons, because of the multitude of cases and statistics, have found out the worth of the measure and its limitations. The methods of operation, and the after treatment are fairly uniform, and the results in the proper hands are well known. That the operation is one of the first magnitude is recognized. Granting that the operator has full knowledge of the parts and the necessary technical skill, that it puts in jeopardy the life of the patient not only through the possibility of infection, but also to a certain slight extent through the use of an anesthetic, can not be gainsaid. These dangers, which are almost inconsiderable, in uncomplicated cases, should not be overestimated, but cannot be disregarded in weighing judgment in a given case. Other facts that must enter into our calculations are,

- I. That the operation does not promise absolute freedom from discharge.
- II. Even when a perfectly dry ear is the result, the formation of epithelial debris and accumulation of wax leading to irritation of the epithelialized area often necessitates the occasional attention of the surgeon.
- III. The time required in the tedious after treatment, which the ablest surgeons place at 8 to 12 weeks, on an average.

These facts do not in any way figure when we are considering cases which are dangerous to the life of the patient. The operation is then one of necessity, not of choice. However, when we are contemplating the advisability of operating upon an ear which in no way is dangerous to life they are important.

The points that come up for consideration when a patient suffering with chronic purulent otitis media presents himself to the surgeon are as follows:

- I. Is the ear dangerous to the life of the patient?
- II. Can the ear if considered dangerous be put into the safe class by measures other than the radical operation?
- III. Is the ear free from danger to life, and if so shall it be operated upon?

It would be a simple matter to dispose of the question of operative necessity were it possible to throw all cases into the dangerous or non-dangerous class. Great difficulty is encountered in deciding this question, and no particular branch of surgery is more benefited by wide clinical experience.

The appearance and characteristics of a dangerous ear give a picture which in many cases is not difficult to interpret. There are many factors entering into

the formation of such a picture. Often instinctively the able clinician recognizes that he has a perilous situation to deal with. Asked, however, to write down the points that have lead him to consider an ear dangerous, and of necessity operable, and he would have difficulty in defining his reasons. The cultivation of a certain clinical feeling is an excellent and inevitable consequence of large experience. This clinical sense, however, must be accompanied by facts which one can put into writing if progress is to be made; otherwise it is liable to give a complacency that is subject to rude awakenings.

The diagnosis of the dangerous ear is made on objective appearance, subjective symptoms, or the combination of the two. We will first take up a consideration of such cases.

Often the patient may present no subjective symptoms whatever. Such cases are most difficult to handle properly. The kind and situation of the perforation in these dangerous cases is of considerable importance. A perforation in the upper part of the drum is worse than one in a lower segment. A hole in Schrapnel's membrane is especially significant, because of the anatomical structure of the attic. Such a perforation must necessarily mean disease of that narrow space. Either the pus has broken through Schrapnel's membrane via Prussac's space or directly from the attic.

A marginal perforation, that is, one which extends to the tympanic ring, especially where such a perforation is in the upper posterior segment, and is accompanied by a roughened condition of the adjoining bone, must be given its proper value as a danger signal, indicating often disease of bone in the antrum.

Granulation tissue not only acts injuriously by blocking the drainage from the diseased parts, but when coming from such a perforation just mentioned, must be taken often as an evidence of necrosis in the attic or additus.

The character and amount of discharge is of great importance. A large amount of creamy pus rarely comes from the middle ear alone. The greater the volume of the discharge, the greater the diseased area. However, the danger is not necessarily in proportion to the amount, for the presence of granulation, or small perforation, or other obstruction such as exostoses of the external canal may lead to suppression of discharge, and increase in the danger. Many times are these patients comfortable with this discharge as long as it flows freely, but exceedingly disturbed from headache and dizziness when from obstruction, the discharge is lessened.

The direction from which the pus comes is very important; is worse again when coming from the upper posterior region. The Siegel otoscope is of use in determining the direction from which the pus comes by employing gentle suction after cleaning.

The bacteriology of the pus in these chronic cases is usually not of much significance. The germs, no matter what sort, usually become comparatively inactive because of the chronicity of the process, but quickly regain their virulence when obstruction confines them.

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Odor of the discharge has considerable significance. It may be due to decomposition of accumulation in an improperly cared for ear. In such a case, a few irrigations will remove the stench. However, when after repeated washings, especially where irrigation of the attic with canulæ has been employed, the odor persists, it is often evidence of extensive destruction in parts inaccessible to our washings, and indeed may mean the presence of that sponge-like mass, cholesteatoma, which holds on to the odor so tenaciously.

Cholesteatoma (nearly always we should say pseudo-cholesteatoma) forms one of the most significant evidences we have of the dangerous character of the ear.

Its presence is diagnosed by seeing it in the fundus, or by the white bits that come out in the washings, and sink in the solution, or by extracting it with the blunt probe. It often hangs in little tufts, somewhat resembling the tufts of leptothrix on the tonsil, from the attic and as we wash or brush it away other flakes appear. Although usually an operative indication, it is not necessarily so, and even has been known to produce a condition in the antrum and attic through pressure, surpassing that result obtained by operation. Its dangers, however, are hard to overestimate. We are toying with the "dynamite bomb" as Macewen says, in allowing it to remain hidden and unoperated upon.

The probe examination for caries is of some help, but I am inclined to think that its usefulness is easily overestimated, and that harm may come from its too free employment. Also there is no doubt that the sensation of rough bone is often produced by the surgeon's too firm pressure. I am sure of this in my own cases because I have had instances where I demonstrated caries to my complete satisfaction, and had the same cases heal in a few weeks under treatment. I think we should use the probe only with the greatest caution.

I shall not go into the symptoms and diagnostic signs of an acute mastoiditis complicating a chronic purulent otitis media. It has all the characteristics of such a case when acute, with grave possibilities added. Such an attack puts an ear in the dangerous class at once. If allowed to heal without operation, the parts must be in much worse condition than before, and intracranial complications much more liable to occur.

The subjective symptoms that add to our knowledge of the dangerous character of an ear are liable to misinterpretation, both on the part of the patient and the surgeon.

Headache is an important symptom; that it accompanies, sometimes, these chronic purulent otitis medias there is no doubt. We often see it come on suddenly when the discharge is in some way blocked, to disappear again when good drainage is established. It is a symptom of great value, but as we have so many other conditions, including hysteria, which produce this symptom, its value is a matter for good judgment of the surgeon to determine.

Intracranial symptoms, which the scope of this paper will not permit of enumeration, immediately put our ear into the operative class.

In vertigo, we have a symptom which also is liable to a good deal of misinterpretation on account of the patient's misconception of it. However, a true disturbance in the sense of equilibrium signifies disease of the labyrinth, and is to be recognized as a dangerous symptom. This subject of labyrinth disease, and the methods which have been recently worked out, we can only mention in passing, as they form such a new, interesting and important part of our advanced ideas of ear disease.

The hearing does not enter into consideration where we are dealing with this first class of cases.

Class II. Can the ear, if considered dangerous, be put into the safe class by measures other than the radical operation? Yes, I think they occasionally can. Thorough cleansing and removal of debris by Hartman's canulæ, or other methods, and the use of quickly drying solutions in cleansing and the employment of dry treatment as consistently as possible, even to wiping out the attic with fine, soft cotton swabs, will give results at times rather unexpected. I have seen cases with cholesteatoma, ragged, marginal perforations in the upper posterior quadrant, although not accompanied by much discharge or other symptoms, heal entirely under this treatment.

Class III. Ears discharging, but not dangerous to life: Is it possible for us to make such a classification? Can we say that such an ear will not light up and suddenly lead to grave complications? I think we can. I think the danger from such an ear as I shall now speak of, is no greater, or very little greater than to a normal ear. One may light up occasionally, and lead to operation, but so will a normal ear, become diseased and I think there is about as much reason in surgeons operating on all such ears as there would be in removing all appendices from the new born.

The ear I am going to describe can be quickly considered by excluding the features portrayed by the first class, or dangerous ears. The perforation, instead of being marginal, is usually central, or low, and surrounded by a good bit of drum margin. The remains of the drum present a fairly thin appearance. The mucus membrane of the promontory is or is not injected, swollen or reddened.

The discharge is not milky pus, but is either thin mucus in character, or is muco-purulent; is of small amount, and except when the patient has a cold it almost disappears. Study often shows it to be coming from the region of the Eustachian tube.

Such an ear has none of the symptoms which we consider indicative of danger, but it will not become dry under treatment. The disease clearly is located in the tympanic cavity. What good is done by an operation on parts which are not diseased? Of course the region of the Eustachian tube can be curetted and if the disease is confined to that part, a cure obtained, but that could be accomplished without the entering of the antrum and attic. If disease of other parts of the wall of the middle ear is the cause of the continued discharge, it will not be possible to cure freely enough or certainly enough to cure because of the possibility of damaging the stapes, or internal wall, forming a com-

munication with the inner ear through which dangerous infection might pass.

These are the cases which after a well performed radical operation, still continue moist. The operation was not indicated and when it was done it did not meet the necessities of the case.

THE DIFFERENT OPERATIONS FOR CHRONIC SUPPURATION OF THE MIDDLE EAR.*

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The treatment of chronic suppuration of the middle ear certainly does not present a brilliant field for medicine or surgery. Local treatment of a medical character frequently stops a discharge which has existed for months or even years, but the suppuration is more than likely to return with the first severe so-called "cold in the head" or on exposure to untoward atmospheric conditions. This fact has caused a reaction from local therapeutic measures to surgical interference.

The objects of treatment in chronic suppurative otitis media are, 1st. To arrest the discharge; 2nd. To prevent complications; 3rd. To restore hearing.

The surgical procedures invoked to accomplish these objects may be classified (1) adenectomies; (2) curettage; (3) ossiculectomy; (4) the meato-mastoid operation and (5) the radical mastoid operation.

1. *Adenectomy.* The first surgical procedure in a chronic suppurative otitis media is to remove all adenoid tissue, and to reduce such superfluous nasal tissue as may be necessary to give natural nasal breathing, for we may be tolerably certain that to remove the discharge from the ear, it will be necessary to get rid of the infecting secretion from the Eustachian tube, and this is particularly so when the perforation of the drum head is centrally located over the tympanic orifice of the Eustachian tube. In these cases, it is sometimes necessary to dilate the isthmus of the tube, in addition to doing the adenectomy.

To remove adenoids it is better to use a general anesthetic in all children under sixteen years of age, excepting in such individuals whose pathological condition contraindicates the use of an anesthetic, and it may be well to state right here that chloroform is *always contraindicated* in the adenoid operation.

2. *Curettage.* When polypi or granulation tissue are present in the external auditory canal they should be snared or curetted away. A perforation of the membrana tympani at its margin usually means necrosis of the bony walls or of the ossicles. When the perforation is at the lower border, the floor of the middle ear may be cautiously curetted with a small bent curette, after making the opening in the drum head sufficiently large for perfect drainage, but if sepsis be present, one must be on the lookout that the jugular bulb is not infected, and if it be, nothing less than the radical operation will suffice. If one is able to secure smoothness of the

floor, then the daily or bi-daily cleansing and packing lightly with sterilized gauze till the necrotic area is healed, may result in a cure. If the perforation be at the anterior margin, the anterior wall is probably necrotic and the curette may be used, but also with great caution, because of the close proximity of the carotid artery. Curette is usually performed under local anesthesia.

3. *Ossiculectomy.* When the perforation is just above the short process of the hammer, the head of this bone is most probably necrosed, and the hammer should be removed. If the perforation be at the upper margin, involving Sharpnell's membrane and edge of canal, the inner wall of the canal, as well as some portion of the ossicular chain, is probably necrosed. In these cases, curettage will accomplish little or nothing, but the ultra-conservative aurist may try ossiculectomy, and oftentimes with gratifying results. However, since 1893 when MacEwen presented his historic work on "Pyogenic Diseases of the Brain and Spinal Cord," this operation has almost fallen into disuse.

Ossiculectomy may be performed under local anesthesia, but with it the pain is very severe; probably the best local anesthetic is a mixture of equal parts of cocain, carbolic acid and menthol. The drum head swabbed with this mixture becomes tolerably well anesthetized in from fifteen to twenty minutes. General anesthesia is usually necessary in order to do the operation carefully and thoroughly. The auricle and external meatus should be scrubbed with liquid soap and warm water, followed by an alcoholic bath. The incision is probably best begun at the center of the anterior margin, continued upward to the malleus and then along down the handle to the umbo, then upwards along its posterior border, then backward to the posterior border of the membrane, leaving a large portion of the membrane for regeneration and repair, though sometimes this may interfere with drainage and must be watched. The tensor tympani muscle is then cut with an angular knife, as well as the ligamentous attachments of the malleus to the outer wall. The malleus may then be removed with forceps or the ring knife. The incus is best detached with the incus hook, and the bleeding, which is frequently very troublesome, may be controlled by a hot 1 to 2000 bichlorid of mercury solution, after which it is dressed with a strip of sterile gauze, loosely packed and sealed with collodion.

The object of operative procedures by way of the auditory canal is primarily to secure free drainage and to remove necrotic and carious tissue, when such is present in the tympanic cavity in limited and easily accessible areas; thus we often remove parts of the auditory conducting mechanism and at the same time carry out the well-known surgical principle of removing obstructions to the thorough evacuation of purulent collections, as previously described. By these means, provided the tympanic focus of infection is limited and available to such instrumentation, the causes which keep up the discharge are removed with the elimination of the diseased bone, and the surgical cleanliness which may then be obtained. In addition to removing the

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